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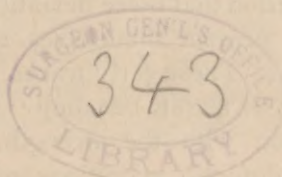
CONTRIBUTION TO TERATOLOGY.

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Definition of Teratology; Giants and Dwarfs; Classification of Mon-
strosities; Four-Legged Child, J. Myrtle Corban; Siamase Twins;
Hungarian Sisters; Carolina Twins, Millie and Christine; John
Allen; Hermaphroditism; Miss Emily Landry, the Bearded Girl.

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CONTRIBUTION TO TERATOLOGY.

DEFINITION OF TERATOLOGY.

The word Teratology which we owe to Geoffroy St. Hilaire, literally means the *science of monsters*; and in the present article we shall apply the term to the *doctrine of congenital deformities*. Teratology in a scientific sense constitutes a part of *pathological anatomy*, which comprises all anomalies of the organization; those which occur during *intra-uterine* life are called *congenital*, and those which arise during *extra-uterine* life, *acquired*. What are commonly called *monsters*, are most generally referable to the former; that is, to the imperfections of the primitive formation.

Teratology, therefore, as a department of Morphological Science, treats of the deviation from the normal development of the embryo. The term "*embryo*" is conventionally limited in human anatomy to the ovum in the first three months of its *intra-uterine* existence, in which it is still developing and acquiring the rudiments of its form; the term *fetus* being applied to it in the subsequent months during which the organism grows in the lines of the development already laid down. It is mostly in the first or embryonic period that these deviations from the normal type occur which present themselves as monstrosities at the time of birth. These early traces of deviation within the embryo may be slight, but they "grow with the growth and strengthen with the strength," until they amount to irreparable defects, accretions often incompatible with *extra-uterine* life.

Although monstrosities both in the human species and animals tend to repeat certain definite types of erroneous development, they do not fall readily into classes.

It is remarked by Vrolik that a scientific classification is

impracticable from being too cumbrous, and that a convenient grouping is all that need be attempted. The most usual grouping originally suggested by Buffon (1800), is into *monstra per excessum*, *monstra per defectum*, and *monstra per fabricam alienam*. Some writers, however, place the more simple cases of excess and defect side by side, and separate the double monsters from the single, the theory of the former being a distinct chapter in Teratology

The origin of monstrosities has been referred to two main causes: 1. To the original malformation of the germ. 2. To the subsequent deformation of the embryo by causes operating on its development.

It is evident that giants and dwarfs are not referable to the action of these causes, because in both forms of monstrosity nothing peculiar may be noticed at birth. The infant of the future giant may be small and well proportioned, and that of the dwarf large and well proportioned. Giants are conventionally limited to persons over seven feet in height, and after the examination of one dozen examples of giants and about the same number of dwarfs, the results of my observations may be thus formulated:

(a) In rare instances the development of the giant is symmetrical; in many cases (excluding of course those individuals who have suffered from rickets or injuries of the spine in infancy or youth), dwarfs are well formed.

(b) In giants the skull is relatively small. Accurate measurements even in the best proportioned cases prove, when reduced to a scale, that other parts besides the skull, especially the thigh bones and the feet, may be undersized though overgrown. The brain case especially is undersized.

(c) In many giants the muscles and viscera are not sufficient for the overgrown frame, and they are usually of feeble intelligence and languid disposition and short-lived.

(d) In most cases the indications of great stature do not appear at birth, and in some individuals not until the ninth

year, and they generally attain their full height before the 21st year.

(e) Giants are not born of gigantic parents and are most generally sterile.

(f) *Dwarfs*, which are conventionally limited to persons under four feet in height, are more intelligent and more lively and more symmetrically formed than giants.

(g) In the dwarf as a general rule the proportion between the several parts is good, corresponding with those of the normal adult, the diminutive stature depending not upon the relative imperfect growth of any one of the segments, or upon the permanence of a foetal or child-like condition, but upon the general want of growth.

When disproportion occurs in a true dwarf, it takes the form of a large-sized head, broad shoulders and capacious chest and undersized lower extremities.

(h.) Although dwarfs are generally strong, active and long-lived, and endowed with strong passions and acute intelligence, as in the case of giants, they are usually sterile.

MEXICAN OR "AZTEC" DWARFS.

At various times idiotic Mexican and Central American dwarfs have been exhibited in various parts of the United States, as descendants of the Aztecs who founded the City of Mexico, and were conquered in 1518-1520 by Cortez. These dwarfs were characterized by black short hair, copper-colored skin, large prominent nose, retreating forehead and small crania. In profile they strongly resemble many of the ancient Mexican and Central American carvings. Traditions of the existence of races of dwarfs have existed in various portions of North and South America, and it has been affirmed that portions of the Cumberland valley, in Tennessee, of the isthmus of Panama and of Peru were inhabited by dwarfs. I have, in the years 1866 and 1867, investigated the graves of the so-

called ancient pigmies of Tennessee, and found them to be occupied by the skeletons of children. The carvings, however, upon some of the ancient Central American monuments would appear to confirm the tradition that a race of dwarfs existed in former ages, and took part in military operations and political changes.

In 1855, I examined, in Philadelphia, two idiotic Mexican children, exhibited publicly, as "The Aztec Children."

These dwarfed and idiotic Central American children have thus been described by Dr. John C. Dalton, in his "*Treatise on Human Physiology*," 4th ed., p. 409.

"There were a boy and a girl, aged respectively about seven and five years. The boy was about 2 feet 9 $\frac{3}{4}$ inches high, and weighed a little over twenty pounds. The girl was 2 feet 5 $\frac{1}{2}$ inches high, and weighed seventeen pounds. Their bodies were tolerably well proportioned, but the cranial cavities were extremely small. The antero-posterior diameter of the boy's head was only 4 $\frac{1}{2}$ inches, the transverse diameter less than 4 inches. The antero-posterior diameter of the girl's head was 4 $\frac{1}{2}$ inches, the transverse diameter only 3 $\frac{3}{4}$ inches. The habits of these children, so far as regards feeding and taking care of themselves, were those of children three or four years of age. They were incapable of learning to talk, and could only repeat a few isolated words.

Notwithstanding, however, the extremely limited range of their intellectual powers, these children were remarkably vivacious and excitable. While awake they were in almost perpetual motion, and any new object or toy presented to them immediately attracted their attention, and evidently awakened a lively curiosity. They were accordingly easily influenced by proper management and understood readily the meaning of those who addressed them, so far as this meaning could be conveyed by gesticulation and the tones of their voices.

Their expression and general appearance, though de-

cidedly idiotic, were not at all disagreeable or repulsive, and they were much less troublesome to the persons who had them in charge than is often the case with idiots possessing a larger cerebral development."

During the past ten years I have examined five other similar "Aztec idiots," four of which are represented in the following engraving (No. 2).

ENGRAVING No. 2.



MEXICAN IDIOTS.—

"Descendants of the Ancient Aztecs of Mexico."

In 1885, a girl with Aztec features, with excessively small cranium, was exhibited on Canal street, and although the coloring and features were Mexican, her keeper affirmed that she was a native of Bay St. Louis, Miss., and was of Indian parentage.

This girl, of about 12 years of age, was not larger than an ordinary child of 6 years of age. Although lame from an injury of the left hip, the femur having been broken and the limb shortened, the child was in perpetual motion; had no power of speech. When a pet dog was brought near she passed her hands through the cage in which she was confined and caught its leg and seized it with her teeth. She

also endeavored to scratch and bite all the children who approached her cage.

At the close of the recent Exposition in New Orleans, I obtained two Mexican babies preserved in alcohol, which presented the same prominent features, with small crania, which characterized all these so-called *Aztecs*.

In figure No. 2, A A and C C, are represented the females, and in B B and D D the males.

A A and B B were exhibited together in 1884, and C C and D D had been exhibited in this city some years previously.

The woman represented by the figure A A died in this city whilst on exhibition at Grunewald Hall, on Baronne street, of what her attending physician styled retro-pharyngeal abscess.

At the request of her exhibitor, Mr. Keller, the body was delivered to the Medical Department of the University of Louisiana for dissection, as will be seen from the following letter of Dr. A. B. Miles, at that time Demonstrator of Anatomy.

MEDICAL DEPARTMENT, UNIVERSITY OF LOUISIANA, }
New Orleans, La., February 14, 1884. }

My Dear Doctor—I enclose certificate of death of a Mexican woman, who, during life, was on exhibition at Grunewald Hall.

The manager of the show proposes giving the body to the College. With your permission, I will have it removed to-night.

If a written permission be necessary, you will oblige me by sending by bearer. I am very respectfully,

A. B. MILES.

DR. JOSEPH JONES,
President Board of Health, State of Louisiana.

The necessary permit was granted, and I made careful examinations of the body, internal organs and cranium.

I record the following results of my observations and cranial measurements. Engraving No. 3 represents the front and side view of the cranium of this woman.

Engraving No. 3.—Cranium, front and side view of Mexican (Aztec) woman, see Engraving No. 2, A A.

Mexican woman, A, Engraving No. 2.

Died from retro-pharyngeal abscess, at Dime Museum, Baronne street near Canal, February 14, 1884.

Well-formed; fat plump trunk and extremities. Marks of extensive cicatrix, apparently caused by a burn on right side of buttock and thigh.

ENGRAVING NO. 3.—CRANIUM OF MEXICAN (AZTEC) WOMAN.



No marks of previous pregnancy. Apparent age, about 21. Wisdom teeth perfectly formed. Chest well-developed and full; mammae well-formed and firm. Hands and feet and upper and lower extremities well formed; the former small and beautiful. Limbs round; they as well as the abdomen and body generally encased in a thick layer of fat. Height about 4 feet 4 inches. Cranium remarkably small, with retreating forehead and prognathous jaws. Teeth full and perfect, 16 above and 16 below. Lower jaw large-boned and powerful.

Facial angle, 62° ; frontal diameter, $2\frac{1}{8}$ inches.

Contents of cranium, 360 cubic centimeters = 23.5 cubic inches.

Biparietal diameter, $3\frac{3}{4}$ inches; occipito-frontal diameter, $5\frac{1}{4}$ inches.

Intermastoid diameter, $4\frac{1}{8}$ inches; diameter vertical from margin of foramen magnum to most prominent portion of arch of cranium, $4\frac{1}{2}$ inches.

Frontal diameter, between the antero-inferior angles of the parietal bones, $2\frac{2}{3}$ inches.

Vertical diameter, from the fossa between the condyles of the occipital bone to top of skull, 3.5 inches.

Intermastoid arch, from one mastoid process to the other over the arch of cranium, 9.8 inches.

Intermastoid line, distance in straight line between the points of the mastoid processes, 9.2 inches.

Occipito-frontal arch, posterior margin of foramen magnum to the suture of os frontis and nasal bones, $14\frac{1}{2}$ inches.

Horizontal periphery, os frontis above superciliary ridge and most prominent part of occipital bone, $13\frac{1}{2}$ inches.

Vertical circumference of cranium over meatus of foramen magnum, $8\frac{1}{2}$ inches.

Diameter meatus to meatus, $3\frac{1}{2}$ inches; cubic capacity of cranium, $23\frac{1}{2}$ cubic inches; length of each ramus of lower jaw, $3\frac{1}{8}$ inches; greatest width of lower jaw, $3\frac{1}{4}$ inches; greatest width of each ramus, $1\frac{1}{8}$ inches.

Distance of posterior border of foramen magnum to occipital protuberance, 2 inches; distance of anterior border of foramen magnum to symphysis of rami (chin), $4\frac{1}{8}$ inches; diameter of foramen magnum (large), $1\frac{1}{8}$ inches.

After many measurements of the crania of various races, as the Mound Builders of the Mississippi Valley, the North American Indians, the Anglo-Saxon, the Negro of Africa, the mummies of Egypt, Arabs, Malays and Chinese, I have found the cranium of this Mexican woman to be of less cubic capacity than any which has ever come under my observation.

So remarkable was the smallness of the brain of this Mexican woman that I instituted careful measurements of the crania of such animals as it had been in my power to procure and prepare for my private collection of comparative anatomy, as will be shown in the following table:

| NAME OF ANIMAL. | Capacity of cranium in cubic centimeters. | Capacity of cranium in cubic inches. |
|---|--|---|
| Mexican Woman (Aztec)..... | 360 | 23.5 |
| Fossil Sloth (Megalonyx Jeffersonii)..... | 520 | 32.0 |
| American Bison (Buffalo), male..... | 560 | 34.6 |
| Horse (draught)..... | 660 | 40.7 |
| Horse (draught)..... | 670 | 41.3 |
| Mule..... | 750 | 46.5 |
| Texas Steer (long horns)..... | 560 | 34.6 |
| Bull (short horns)..... | 510 | 31.6 |
| Sheep (Ram, long horns)..... | 110 | 6.8 |
| Goat (long horns)..... | 105 | 6.4 |
| Sheep (Ram, long horns)..... | 130 | 8.0 |
| Sheep (Yew)..... | 120 | 7.4 |
| American Deer (Buck, long horns)..... | 165 | 10.2 |
| American Deer (Buck, long horns)..... | 160 | 9.9 |
| Large Dog (cur)..... | 100 | 6.2 |
| Hog (male)..... | 170 | 10.5 |
| Hog (female)..... | 110 | 6.8 |
| Large Brown American Bear..... | 250 | 15.5 |
| Brown American Bear..... | 230 | 14.2 |
| Brown Russian Bear..... | 240 | 14.9 |

The most interesting cranium embraced in the preceding measurements is that of the fossil sloth of the Mississippi Valley (*Megalonyx Jeffersonii*), which I have figured in engraving No. 4, figure No. 1. This specimen was found in the loess near Natchez, Mississippi.

The drawing represents only a fragment of the tooth, 5 inches in length. The entire tooth was formerly 10 inches in length.

ENGRAVING NO. 4.—FOSSIL MAMMALIA OF MISSISSIPPI VALLEY

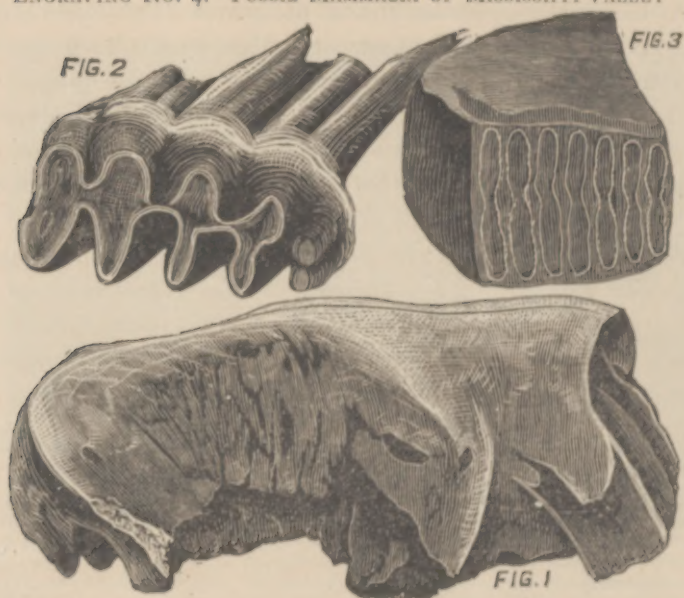


Figure 1.—Cranium of *Megalonyx Jeffersonii*. Cubic capacity of cranium, 520 cc = 32 cubic inches. Length of superior surface of cranium, 13 inches. Width of opening of proboscis, $3\frac{1}{2}$ inches. Perpendicular diameter of cranium, 7 inches. Length of cranium from border of foramen magnum to end of upper jaw, 14 inches.

Figure 2.—Molar of *Mastodon giganteus*, Adams county, Miss. Length, 9 inches; from crown to end of fang, 8 inches. Figure No. 3.—Molar of *Elephas primogenius* or Mammoth, from St. Landry parish, La.

From the preceding explanation we obtain the remarkable results that the cubic capacity of this Mexican (Aztec) idiotic dwarf is 160 centimeters less than that of the extinct North American sloth, *Megalonyx Jeffersonii*; 200 less than that of the American bison; 310 less than that of the horse; 390 less than that of the mule; 200 less than that of the Texas steer, and only 110 cubic inches more than that of the cranium of the American brown bear.

The capacity of this Mexican cranium was not more than about one-fourth of the well-developed human cranium.

CAUSES OF CONGENITAL ANOMALIES.

I. ORIGINAL MALFORMATION OF THE GERM.

If the germ be considered as a product or secretion by the female organism, upon which the male sperm acts with its material and vital influences, the germ may be originally malformed, owing to some influence proceeding either from the female or male sex.

II. DEFORMATION OF THE ORIGINALLY WELL-FORMED GERM.

- (a) By mental impression of the pregnant woman.
- (b) By external injuries suffered by pregnant women.
- (c) By the supervention of diseases during the period of pregnancy. There are instances of the foetus being the subject of *intermittent fever* (P. Russell); of sudden death, occasioned by frightful agitation of the mother (Wienholdt); of jaundice communicated by the mother (Kerckring); of small-pox (Jenner, Montgomery, Friedlander); of syphilis and scarlet fever (R. Lee); of yellow fever (Joseph Jones, M. D.)—all derived from the mother.

III. DISEASES OF THE OVUM AND FÆTUS.

- (a) Acute and chronic placentitis.
- (b) Destruction of the coats of the ovum.
- (c) Formation of pseudo-membranes; *bridcs* placentaires of Professor St. Hilaire.
- (d) Morbid states of the coats of the ovum: *mola fungosæ*, *carnosæ*, *cruentæ*, and *tendinosæ*.

Valentin distinguishes in the sanguineous mass of *mola carnosæ* a net of vessels, from which the blood issues. It is the vascular net of the chorion, in which the mass of blood has been collected, in consequence of too great a supply from the uterus. By these means the villi are distended and removed. The ovum being thus degenerated, occasions defective respiration and nutrition of the fœtus, which, in consequence, soon dies. The ovum, however, may still continue to grow, and is finally expelled. In this manner these *molæ* are frequently the cause of *miscarriage*.

IV. IMPEDED DEVELOPMENT OF THE FÆTUS FROM SOME REMOTE OR UNKNOWN CAUSE.

It has been a subject of dispute whether the deforming cause operates on the fœtus in its totality, or whether it affects originally only one system, which spreads its deforming influence over all the others. This last idea was embraced by Tiedemann, who at first deduced all monstrosities from some defect of the vascular, and later from the nervous, system.

W. Vrolik has ably contested this view of Tiedemann.

CLASSIFICATION OF MONSTROSITIES.

We shall avoid a critical examination of the systems proposed by Licetus, Huber, Wigel, Malacarne, Burton, Blumenbach, Breschet, Geoffroy St. Hilaire, Gurlt, Otto and Bischoff, and we shall adopt the simple grouping of the learned Dr. W. Vrolik, taking embryogenesis as the basis.

I. MALFORMATION OF THE OVUM.

(a) *Molihotryxides or Hydatia, Hydrometra, Aquatica*: This is a degeneration of the chorion into vesicles of different sizes, filled with a serous liquor, which were erroneously taken for hydatids.

(b) *Separation of the Placenta into Lobes or Cotyledons*.

(c) *The Vesicles of the Umbilical Cord are separated near the placenta and meet at a considerable distance from it.*

(d) *The Umbilical Cord too long*. The common length of the cord is 20 inches, but it may be 48 inches, and sometimes 5 feet. This abnormal length of the cord may cause its circumvolution around the fœtus, strangulation and death, or, by constricting one of the extremities, causing spontaneous amputation.

(e) *The Umbilical Cord too short*. The minimum measure has been stated at 7 inches, but the cord may, however, be much less. This condition may cause ectopia of the abdominal viscera.

(f) *Absence of one of the Umbilical Arteries*. This

may be observed in double monsters, but occurs principally in *Ectopia Viscerum Abdominalium*, and in defective formation of the inferior parts of the body.

- (g) *Increased Number of the Vesicles of the Cord.*
- (h) *Persistence of the Umbilical Vesicle.*
- (i) *Constriction of the Umbilical Cord.*
- (j) *The Umbilical Cord too thick.*

II. MALFORMATION OF THE FÆTUS.

A. MONSTROSITIES PRODUCED BY THE ARREST OF DEVELOPMENT.

I. NON-CLOSURE OF THE ANTERIOR PART OF THE BODY.

- (a) *Fissure of the whole anterior wall of the body.*
- (b) *Fissure of the thorax.*
- (c) *Fissure of the anterior abdominal wall.* Complete ectopia of the abdominal viscera; congenital umbilical hernia; congenital ventral hernia; acquired umbilical hernia.
- (d) *Fissure of the pubic and hypogastric regions.* Formation of a cloaca; congenital fissure of the urinary bladder, ectopia vesicæ urinariæ, inversio vesicæ urinariæ.
- (e) *Cervical fissure (fistula colli congenita).*
- (f) *Fissure of the face.* Complete fissure of the face: double labium leporinum; single hare-lip; fissure of the palate without a hare-lip; fissure of the under-lip.

2. FISSURE OF THE SKULL—ACRANIA.

- (a) Want of the brain and exposure of the whole basis of the skull.
- (b) The denuded surface of the basis cranii occupied by a spongy substance instead of brain.
- (c) The surface of the basis cranii only partially denuded and a spongy tumor occupying the place of the brain.
- (d) The skull flat and closed, but having an opening through which the brain protrudes as a hernia.

3. FISSURE OF THE BACK PART OF THE BODY.

- (a) Hydorrachis and spina bifida.

4 HYDROCEPHALUS CONGENITUS.

(a) Hydrocephalus Internus.

(b) Hydrocephalus Externus.

5. ACEPHALIA OR FÆTUS WITHOUT A HEAD.

6 WANT AND DEFECTIVE FORMATION OF THE TRUNK,—
ACOMIA.

7. DEFECTIVE FORMATION OF THE EXTREMITIES.

8 CYCLOPIA.

9. DEFICIENCY OF THE UNDER JAW—MONOTIA.

B. MONSTROSITIES PRODUCED BY AN EXCESS OF DEVELOPMENT.

1. FÆTUS IN FÆTU.

The human fœtus may be in another fœtus or adhere to its body. This may happen in two different manners: First, a fœtus more or less perfect contained in the cavity of the body of its twin brother or sister. Second, the more or less developed rudiments of a fœtus adhere, in the form of a tumor, to the external surface of a second body, and are covered by the external integuments.

2. DOUBLE MONSTERS—HETERADELPHI,

in which one of the fœtuses is more or less perfect and the other merely an appendix to it, and these are called *Heteradelphi*.

Under this name, *Heteradelphi*, which we owe to Geoffroy St. Hilaire, we understand that species of *double monster*, of which one fœtus is large and perfect, and another, or part of another, adheres to it like a parasite. They should be considered as *twins*, of which one has been developed at the expense of the other, which other sometimes becomes partially included in its body. According to the more or less perfect state of the appendix, they are reduced to different species: First species, the appendix consists of a head only; second, the appendix consists of more or less developed extremities only; third, the appendix is an acephalus with four extremities; fourth, the appendix a complete body, with a head and four extremities.

This form of *Heteradelph* makes the transition to the anterior duplicity. The appendix has but to be more equally proportioned to the chief body, and a completely double monster is formed.

3. DOUBLE MONSTERS.

(a) *Anterior Duplicity*.—It has been observed that some of the rarer kinds of *Heteradelphia* approximate closely to the double monsters.

(b) *Lateral Duplicity*.—In lateral duplicity the two bodies are not set opposite to one another, but are turned sideways from one another. They have a common thoracic cavity, for the formation of which, at least in the highest degree of duplicity, the right ribs of one body and the left of the other proceed towards the anterior and posterior aspects, and are there connected with an anterior and posterior sternum.

The numerous varieties of lateral duplicity may be divided into two principal sets. The first begins with the complete duplicity of the whole body and ends with its perfect singleness; in the second, the duplicity of the body remains, but the head gradually becomes single. The forms herein included may be divided into 13 groups.

(c) *Inferior Duplicity*.—This division of double monsters includes those cases in which there are two complete bodies, with the lower portions of their respective trunks united, so that there is a head with upper extremities both above and below (the bodies being placed in the same straight line) and on either side of the part at which they meet two lower limbs.

(d) *Posterior Duplicity*.—In this form two bodies are united by their backs, or a part of them. The union may be at the pelvis (which is most common), and occurred in the well-known Hungarian sisters, who lived to their twenty-second year; or at the back of the vertebral column, or at the back part of the heads.

(e) *Superior Duplicity*.—In superior duplicity the two children are connected by their skulls, the bones of which

are united so as to form a single skull—all these are true double monsters.

4. TRIPLE MONSTERS.

This form of monstrosity appears to be very rare as it appears that but one instance has been recorded in the human subject.

The preceding brief analysis of the labors of various writers, but more especially of W. Vrolik, enables us to refer to their position in the classification of monstrosities those cases which have come under our observation.

We do not propose upon this occasion an exhaustive description and anatomical dissection of the numerous cases of double monsters in the lower animals, now in our possession, as a double-headed snake (*Coronefla gestula*), the two perfectly formed heads being joined upon the same lateral plane of the common neck; several specimens of doubled-headed chickens; double-headed chickens with four legs; double-headed pigs, with two anterior and four posterior extremities; eight-legged calf, etc. We desire to place on record two or more cases which appear to be worthy of study and preservation.

As far as my observations have extended those remarkable cases of monstrosity, when two or more individuals are united, the changes may be referred to definite laws of union, and of altered or aberrated development of the ovum. In such cases, the unions are symmetrical, or may be referred either to the union at an early stage of two or more impregnated ova, or to a division or fission of the single ovum, or to an excess of the developmental powers of the ovum.

But we never have in such monstrosities a new genus or species produced. The acephalous monster, the double-headed monster, and all the varied forms of monstrosity in the human race partake of one common nature, and are incapable of propagating their peculiarities, and are thus incapable of originating new species or genera.

FOUR-LEGGED CHILD—J. MYRTLE CORBAN.

One of the most remarkable instances of monstrosity which has come under my observation is that of the four-legged infant, J. Myrtle Corban, examined and described by Prof. Paul F. Eve and myself in Nashville, Tennessee, June 16, 1868.

The following engraving (No. 5) represents the appearance of this monstrosity :



ENGRAVING NO. 5.

FOUR-LEGGED CHILD, J.
MYRTLE CORBAN, JUNE 16,
1868, ABOUT 5 WEEKS OF
AGE.

The following description of the infant, J. Myrtle Corban, was prepared by the late Prof Paul F. Eve and myself. .

Nashville, Tenn., June 16, 1868.—The undersigned, in response to the request of a number of physicians and the relatives and friends of the unfortunate subject of this investigation, give the following testimony: The infant, J. Myrtle Corban, has four legs and two distinct external female organs of generation, with two external openings of the urethra and two external openings of the double rectum. The external genito-urinary organs are as distinct as if they belonged to two separate human beings. The feces and urine are passed (most generally simultaneously, particularly the urine) from both external urinary and intestinal openings, situated respectively between the left and right pairs of legs.

The head and trunk are those of a living, well-developed, healthy, active infant of about five weeks, whilst the lower portion of the body is divided into the members of two distinct individuals, near the junction of the spinal column with the *os sacrum*. As far as our examination could be prosecuted in the living child, we are led to the belief that the lower portion of the spinal column is divided or cleft and that there are *two pelvic arches supporting the four limbs*, which are situated upon the same plane.

Photographs of this infant have been made by the advice and under the supervision of one of our number.

The reality in this case surpasses expectation, and we are of the opinion that this interesting *living monstrosity* exceeds in its curious manifestation of the powers of nature in abnormal productions, the celebrated "Siamese Twins."

JOSEPH JONES, M. D.,
Prof. of Phys. and Path., U. of Nashville.
PAUL F. EVE, M. D.,
Prof. of Surgery, University of Nashville.

Further remarks by Profs. Jones and Fox.—Josephine Myrtle is the third offspring of W. H. and Nancy Corban, aged twenty-five and thirty-four, the wife being the senior by nine years. They are so much alike in appearance, having red hair, blue eyes and very fair complexion, as to produce the impression of their being blood kin, which, however, is not the case. Mrs. Corban is from North Alabama, had borne one child to a former husband, the child having dark coloring, and resembling mustily the father, who had black hair and eyes. Her three children are all girls; the one already alluded to, now six years old, another three, and this infant *unmistakably*, now to be more minutely described, born the 12th of May, 1868, in Lincoln county, Tennessee, five weeks ago.

Mr. Corban is a Georgian, served in the Confederate army through the war, and was severely wounded in the right and left hands. The parents are in fair health, though the mother is *anæmic*. She recollects no fright or disturbance during her last pregnancy. The presentation was fortunately her head, which accounts for the preservation of the life of the child. It would be curious to speculate on the trouble which might have been produced had the feet or breech presented, while the result, in all probability, would have proved fatal to the infant, and possibly to the mother. Mrs. Corban says that there was nothing peculiar in the labor or delivery. When three weeks old the child weighed ten pounds. It now nurses healthily, is thriving well, and we saw it urinate simultaneously, between the *two pairs of labia of the two vaginas*, interspersed about six inches apart. From the crown of the head to the *nubilis* the child measures twelve inches, and from this point to the toes of the right and left external feet, eleven inches. From the *nubilis* up, all is natural and well-formed; all below this, extraordinary and unnatural. An inch below the navel is a mark of an apparent failure for a second one. There are four distinct pretty well developed, lower extremities. They exist in pairs on both sides of the median line, which resembles the cleft of an ordinary pair of legs; but here there are no marks whatever of *oscs* or *genital organs*, and upon pressure we discover *no os cœcæ* or *intestum*. The outer legs of both sides are the most natural of the four (though the foot of the right one is clubbed), but are widely separated by the two supernumerary ones, which are less developed, except at their junction with the body, from which they taper to the feet and toes (more diminutive and which are turned inwards. One toe is bifid on the left extra inward extremity. As with these extra legs were failed that upon the abdomen. We are led to believe that there are *two uteri as well as two recta*; in fact, that the pelvic organs are double. Of course a minute dissection would alone expose the true condition of these parts.

Should this infant reach maturity and the internal generative organs be double, there is nothing to prevent coöperation on both sides. The first difficulty will, however, be in her walking. The outer, or external legs, may be used for progression; the inner or infused ones, probably serve. These might be successfully amputated at the knee, or higher up.

One of us recollects at being in London, in January, 1855, at an exhibition of the Slaves' Twins, when Sir Ashley Cooper gave an opinion and came to an operation with a view to separate them, but which has always appeared to us needless and without much risk of *perilousness*; an operation, too, which should undoubtedly be performed in case of the death of one of them, for no medical man believes to the vulgar impression that they must die simultaneously. In the present case all surgical interference is, of course, out of the question, except that alluded to—removal of the extra legs.

Cases somewhat similar to the above have occurred and been described. Rokitsky refers to two completely distinct females contained at their ovaries or *oscs*, as in the well-known Hungarian sisters, Helena and Judith, born in 1701, who survived their twenty-second year.

Geoffroy St. Hilaire alludes to cases of a trunk with two heads, some even Janus-like, having four upper and four lower extremities.

The case, however, recalled most vividly by Josephine Myrtle, is that of Rita-Christina, well-known in Europe, and accurately described in this country years ago by Prof. Meigs. In this wonderful instance there were two heads, two necks, four arms, but only two legs; and was thus the reverse of our case. From the *umbilicus* down there was one well-formed child, but above this all the organs were double; in reality there existed two beings. The *rectum* and bladder were common to both, but all else in the trunk was double and distinct. One would sleep while the other played, etc., for they had *two spinal marrows, two brains, two hearts*, but the last two occupied a common *pericardium*. Unfortunately, after surviving a little over a year, one sickened and died, when the other, then in health, instantly expired.

Rita and Christina were born in Sardinia, 1829, and described by Dr. De Michaelis, Professor of Surgery in the Royal University of Sassari, and lived eighteen months.

The late Prof. J. C. Warren, of Boston, first described the Siamese Twins brothers, when purchased of their mother by Capt. Coffin and Mr. Hunter (joint owners), and brought to that city in 1829.

The infant, J. Myrtle Corban, described by Prof. Paul F. Eve and myself in 1868, appears to be one and the same individual as the lady described in the following report of the Alabama State Medical Association, published in the New Orleans *Picayune* of April 13th, 1888:

Montgomery, Ala., April 13, 1888.—The State Medical Association adjourned without day this evening, having been in session here since Tuesday morning.

Dr. Milton C. Baldrige, of Huntsville, was elected president, Dr. B. F. Cross, of Decatur, vice-president, and Dr. B. M. Hughes, of Birmingham, orator.

Mobile was chosen as the place for holding the next annual meeting.

A wonderful case of deformity or freak of nature, which is without a parallel in all history, has come to light in Alabama. Dr. Lewis Whaley, of Birmingham, read a paper presenting the strange case to the State Medical Association last night.

The phenomenon is in the person of Mrs. Clinton Bicknel, a white lady, who resides in Alabama. She is a perfectly double woman in her body and lower extremities, having four legs, four feet and two separate and distinct but complete sets of physical organs.

Dr. Whaley was called to see the lady some weeks ago, and was non-plussed by her strange sickness and symptoms.

He called in two other physicians to assist him in making a diagnosis of the case. They found on examination that Mrs. Bicknel was in a state of pregnancy on one side only—the left side. They found it necessary to produce an abortion and she gave premature birth to a well-formed child. Sometimes, the doctors say, the lady suffered with diarrhœa on one side of her body and constipation on the other.

She was formerly Miss Josephine Myrtle Corban. At 18 she married Clinton Bicknel and is now 20 years of age. At present she enjoys good health.

Photographs of the lady were presented to the Association by Dr. Whaley, illustrating the marvelous case of deformity which has attracted more attention than anything that has ever come to the notice of medical science in Alabama.

I was compelled to rely upon the report of the *Picayune* until a brief answer was received from my letter of inquiry

addressed to the President of the Alabama Medical Association, which we here record.

BIRMINGHAM, Ala., May 17, 1888.

Dr. Joseph Jones—Dear Doctor: Your surmises are correct. Yesterday evening for the first time since yours of the 4th inst., I saw Dr. Lewis Whaley. The lady, Mrs. Bucknel, of Blount county, Ala., is the Myrtle Corban of days gone by. Attractive in face, physically well, and able to attend to all her household duties. Dr. W. has seen her quite recently. He promised me yesterday evening to have some photographs taken from his latest and will give me one to send to you at the earliest practical date. I regretted that I could not find a delegate to your meeting at Monroe and urged my successor, Dr. Baldrige, of Huntsville, to send one. Some of these years, if I can find leisure from my busy work, I will come myself. Your old friend,

E. H. SHOLL.

I have recently received the following letter from Dr. Lewis Whaley, of Birmingham, communicating valuable information with reference to Myrtle Corban, and enclosing two excellent photographs, taken at the ages of about 4 years and 17 years.



ENGRAVING No. 6.

Miss J. Myrtle Corban, about 4 years of age.

It will be seen that at the age of four or five years, the difference between the two outer and the inner limbs was much more marked than during the period of infancy. The difference between the inner and outer limbs becomes still more marked at the age of seventeen; the former presenting an atrophied appearance, due without doubt to the absence of muscular exercise and pressure.

BIRMINGHAM, Ala., June 13, 1888.

Dr. Joseph Jones—Dear Doctor: I will give you as complete description of Myrtle as I can. I have known her from childhood, but never fully realized the peculiar development until called to attend her in the case reported to the Association. She was 20 years old the 11th of May. One photo taken about 4, the other near 17 years of age. You know the

inferior extremities were the same length in infancy, and I suppose was the pressure which retarded the growth of the inner ones. Her health has usually been good, and she is very intelligent. Is about five feet high—has fair skin, blue eyes and red curly hair. Holds her hands slightly extended in walking as if to balance herself.

The genital organs are perfect, though small. I can't account for the double development, unless it be that two ova blended and were impregnated at once.

A brief sketch of her pregnancy is as follows: I found her with pain in left side, nausea and vomiting, loss of appetite, except for certain articles. Had not menstruated for two months; headache and fever. Pain over pubis, and she thought an abscess was forming there. After watching and treating symptoms, making thorough examinations frequently, I decided she was pregnant in her left side, and told her so. She replied, she thought I was mistaken, but could have believed it more readily if it had been the right side. The outlet to the pelvis being so small, I decided it would be necessary to produce abortion, and she was then very much emaciated. I requested consultation, and two physicians were summoned, who agreed with me as to the pregnancy, also that abortion would be necessary. We introduced the uterine sound and gave extract ergot. After waiting two days, I introduced the sound again, and was satisfied I had pierced the membranes. The next day I was sent for in haste, and she was soon delivered of a well-developed fœtus of three and one-half months. You can have the pictures engraved if you wish.

I shall be pleased to read the article to which you allude, and thank you for the circular you sent of John Allen. That case is unfortunate, for one does not know where to place such anomalies. I will take pleasure in assisting you in any way I can, and in answering any questions which may occur to you, and remain, Respectfully yours, LEWIS WHALEY.

ENGRAVING NO. 7.



MISS J. MYRTLE CORBAN, AGE 17 YEARS.

The progressive development of the two outer legs, in the case of J. Myrtle Corban, is well marked and is worthy of consideration.

Something similar was noted in the remarkable example of the Siamese twins.

When exhibited they were not exactly opposite to each other, but stood side by side, or rather, obliquely, one by the other; but this position was acquired by the attempts which they had evidently made to separate from

each other in walking, or in lying and sitting down, and by the extension they have thus effected in their bond of union, which was considerably more slender than in any other yet described. It was quite impossible for them to remain always face to face; therefore their bodies acquired an oblique direction, in which they also moved. The consequence of this was that the right limbs of the one and the left of the other individual were the principle organs of movement; and that the intermediate limbs, that is to say, the left of the one and the right of the other, remained merely passive (Dubois).

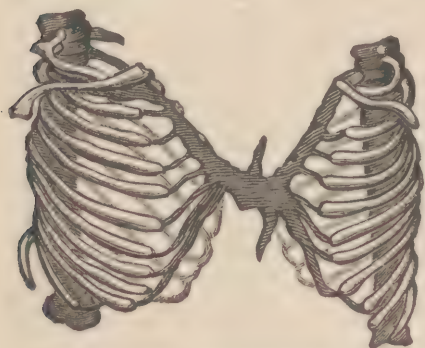
The thanks of the medical profession are due to Dr. Lewis Whaley for the valuable record of the subsequent history of the wonderful case of Myrtle Corban.

One individual was stronger than the other and seemed to control him; nevertheless, in organic and animal relation of life, the Siamese twins seemed to be independent of each other, each having his own circulation of blood, his own respiration and digestive function. W. Vrolik, and other physiologists concluded that, whilst there did not seem to be a large anastomosis of vessels between the two bodies, nevertheless, reasoning from analogous cases, the twins were connected by the ends of their sterna and by some of their abdominal organs. As proof of this connection, they adduced the results of the observation of Mr. Mayo communicated at the *Conventions of the College of Physicians*, March 8, 1831; that when either of the Siamese twins coughed, the bond of union swelled up in its whole length, proving that they had but one peritoneal cavity, of which a transverse prolongation passed through the connecting medium. From these observations W. Vrolik and others concluded that an attempt at separation could not be made with probability of success. The probability of having to cut through a piece of liver, or a peritoneal cord, must render an operation unwarrantable, unless after the death of one of the bodies during the healthy state of the other. As we shall see in

the progress of these observations, the opinion expressed by anatomists and surgeons relative to the severance of the bond of union between the Siamese twins was sustained by the results of post-mortem examination.



ENGRAVING No. 8. — INFANS
BICORPOREUS XYPHOPAGUS.*
Double Monster with two bodies
united at the sterna.



ENGRAVING No. 9.—Thoraces
of Double Monsters united by
sterna.

In the case represented by engravings 8 and 9, the two bodies are more nearly united than the Siamese twins. The two bodies, in a state of nearly equal development, are placed nearly opposite to one another, with their sterna connected together, and with their abdominal cavities coalesced. The umbilical cord was single, notwithstand-

*Tabula Nonagesima Octava. Tabulæ ad illustrandam embryogenesisin hominis et mammalium, tam naturalem quam abnormem. Auctore W. Vrolik, Med. Doctore, etc. Amstelodami, 1819.

ing that the heart was perfectly double. The rest of the sterna and ribs were distinct, and the thoracic cavities, with their viscera (heart and lungs), were thereby separated.

When the sterna are more completely fused than in the preceding case, or entirely absent, only a single heart, or one partially double with two ventricles and four auricles or otherwise malformed is found. In these as in all other kinds of double monsters, there is no constant relation between the respective states of the external and internal organs, for the condition of the two digestive canals, even in those which are externally alike, is subject to still greater varieties than the condition of the heart.

The abdominal organs are always in some degree connected; the two livers are usually continuous.

A spleen, pancreas and stomach are commonly found in each body, and each stomach has its own duodenum, which, after some length (being continued into the jejunum), unites with the other to form a single tract of small intestine, which again divides into two canals, leading respectively to the large intestine of each body. The lungs, the urinary and the genital systems are always double.*

Wands has recently reported a case of *THORACOPAGUS*, in which both children, females, except for the area of union, were perfectly formed. There were two thoracic cavities, but only one abdominal: one placenta and abdominal cord supplied both. It was divided for a short distance from the abdominal wall. A slight condition of *ectopia abdominalis* existed, and through the opening Dr. Wands was able to feel the liver, which was single, and lay across the cavity. The bodies weighed 11 lbs., each was over 17 inches in length, and the two measured 16½ in circumference around the waist.

Van Heenkelen has described the anatomy of a double monster in the Boerhaase laboratory, very similar to the

*The *Cyclopædia of Anatomy and Physiology*, edited by Robert Bentley Todd, Vol. iv, London, 1852; Article *Teratology*, W. Vrolik, pp. 942-976.

above. The union, however, was by the thoraces as well as the abdomen; a single line, triangular in form, with a sulcus in the centre, showed where the union had taken place. The heart was single, there were two stomachs, and two duodena, united to a single jejunum. The ilium was double.

Herrgott records a case of *thoracopagus*, in which union was by the thoraces and abdomen. With the exception of a double hare-lip on one of the children, they were apparently well formed.

Skibbe reports a similar case, in which one heart was hypertrophied, and the other defective, presenting a high grade of stenosis of the tricuspid valve. The greater portion of the intestinal canal was common to both. (Annual of the Universal Medical Sciences, etc., edited by Chas. E. Sajous, M. D.; Phila., 1888; vol. V, p. 447.)

Under the head of Inferior Duplicity have been included those double monsters in which there are two complete bodies, with the lower portions of their respective trunks united, so that there is a head with upper extremities both above and below (the bodies being placed in the same straight line) and on either side of the parts at which they meet two lower limbs. In the following case two children were stuck together by their buttocks, and so fixed with wide-spreading lower limbs; a common trunk being thus formed, with a head at each end, with two upper limbs, both above and below, and with two lower limbs, one belonging to each fœtus on the right, and two on the left of the united portion.

The two children represented in engraving No. 10 were born about fifty years ago, at Boyle, in the County of Roscommon, Ireland. They were born alive and lived for more than a week; after their death, they were sold to the College of Surgeons in Dublin, in whose museum a preparation of their skeleton is preserved.*

* The Cyclopædia of Anatomy and Physiology, edited by Robert B. Todd, M. D. London, 1839, Vol. 11, p. 317. See, also, case by Dr. Alcock, in Dublin Medical Essays, Vol. 11, p. 33, and Hall on the Cæsarean Section, p. 470.



ENGRAVING NO. 10.

INFERIOR DUPLICITY.

DOUBLE MONSTER WITH THE LOWER PORTION OF THEIR RESPECTIVE TRUNKS UNITED. THE TWO CHILDREN WERE STUCK TOGETHER BY THEIR BUTTOCKS. BORN AT BOYLE, IN THE COUNTY OF ROSCOMMON, IRELAND.

These monsters have been known to live a considerable length of time, their capacity for life being probably owing to the separation of their hearts and the absence of malformation in the more important organs of the body. The umbilical cord is single and never has a double set of vessels.

This fact has been regarded by some embryologists as an apparent proof that the one body is but formed of the materials of two. This view is confirmed by similar examples in other classes of monsters, and by the concomitant singleness of the anus and urinary bladder and the union of the intestinal canals.

On the other hand, such cases have been regarded by W. F. Montgomery * and others in contradiction to the theory of W. Vrolik † as due to the cohesion or intussusception of germs, in consequence of more than one ovum being contained within the same vesicle, under which circumstances unnatural union may take place between two fetuses, and give rise to such anomalies of organization as we have just described.

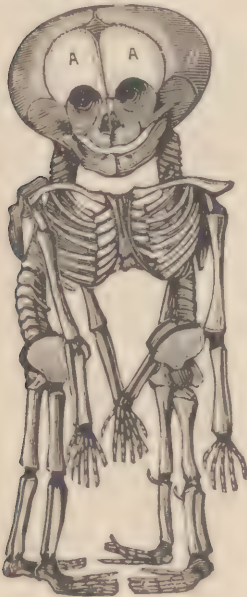
*Cyclopædia of Anatomy and Physiology, Vol. II, 1836, p. 317.

†Cyclopædia of Anatomy and Physiology, Vol. IV, 1852, p. 972.

In the following remarkable monstrosity, figured in engraving No 11 we have the union of two crania, and the coalescence of the common body with four arms, and the division of the common thorax at the point of the junction of the umbilical cords into two lower portions provided with two well-formed pelvises, to each of which are attached two well-formed extremities.



ENGRAVING NO. 11.
INFANS DEFORMIS BI-
CORPOREUS MONOCE-
PHALUS ET JANICEPS.*



ENGRAVING NO. 12.
Skeleton of Monster represented in preceding
engraving (Infans Deformis Bicorporeus Mo-
nocephalus et Janiceps.) †

* Tabula Nonagesima Sexta. Tabulæ ad illustrandam embryogenes'n hominis et mammalium tam naturalem quam abnormem. W. Vrolik. Amstelodami, 1840.

† Tabula Nonagesima Septima, W. Vrolik, loc. cit.



ENGRAVING NO. 13.

BASE OF BRAIN OF MONSTER
REPRESENTED IN ENGRAVING
NO. 11.

INFANS! DEFORMIS, BICOR-
POREUS, MONOCEPHALUS ET
JANICEPS.*

In engraving No 12 we have the representation of the skeleton of this remarkable monstrosity. The two skeletons are attached to a common cranium, by two distinct vertebral columns.

The base of the brain figured in engraving No 13 illustrates the existence of two cerebellar masses, two pontes, and two medullæ oblongatæ.

Such examples might be cited to illustrate the doctrine that the origin of monsters arose from the original conformation and changes of the cerebro-spinal system, but there are other examples to show that the formative power or force precedes nervous action or the appearance of the nervous system.

SIAMESE TWINS.

The subsequent history of the Siamese twins shows that the eminent surgeon, Sir Astley Cooper, was correct in his opinion adverse to an operation with a view to separate them.

The Siamese twins died in 1874, at the age of sixty. They were joined by a thick fleshy ligament from the lower end of the breast bone (xiphoid cartilage), having the common bond on the lower border: the anatomical exami-

*Tabula Nonagesima Septima. W. Vrolik, loc. cit.

nation showed, however, that a process of peritoneum extended through the ligament from one abdominal cavity to the other, and that the blood-vessels of the two livers were in free communication across the same bridge. There are one or two cases on record in which such a ligament has been cut at birth, one at least of the twins surviving.

Twins may be regarded as the physiological analogy of double monsters and from the cases like the Siamese twins, in which the monsters have come very near to being two separate individuals, there are all grades of fusion of two individuals into one, down to the condition of a small fragment or parasitic body on a well-grown infant, *fœtus in fœtu*.

The infant, J. Myrtle Corban, is with difficulty referred to a special form of monstrosity, as whilst the head and trunk are those of a healthy, active infant, the lower portion of the body is divided into the members of two distinct individuals near the junction of the spinal column with the *os sacrum*. We were led to the belief that the lower portion of the spinal column was divided or cleft, and that there were *two pelvic arches* supporting the four limbs, which are situated upon the same plane. We were led to believe that there were *two uteri* as well as two *recta*, in fact that the *pelvic organs were double*.

Now, if we refer Myrtle Corban to the class of HETERADELPHS or DOUBLE MONSTERS, in which one of the fœtuses is more or less perfect, and the other merely an appendix, it is difficult, if not impossible, to distinguish the original and perfect fœtus from the appendix.

It looks rather as if during the development of the ovum there had been a true fission or division of the spinal cord and of the intestinal tube and genital organs. Nothing but a careful dissection of the parts will finally settle the questions suggested by this remarkable case.

I have recently examined the case of a white lad about 14 years of age, a native of Louisiana, who was supposed

to have scrotal hernia, but I found upon careful examination no varicocele and no hernia, BUT THREE LARGE well-developed TESTICLES. In another case of a married man "*who had never had but one testicle*," I was called to see him in great pain, with rapid pulse and incessant vomiting. The attending physician had pronounced the case to be one of strangulated hernia, and was preparing to operate, to which procedure, however, the patient objected. Upon careful examination I found a hard tumor about one inch in length, three-fourths of an inch in diameter in the right inguinal region. By careful taxis I brought the testicle out of the ring into the scrotum, and left the patient rejoicing in the possession of two testicles instead of one. These facts illustrate the difficulty of forming correct conclusions in the absence of the most rigid examination. Of course, in the living infant the determination of the presence or absence of one or more uteri was impracticable.

The monstrosity, J. Myrtle Corban, appears to be a deviation, not from the usual kind of twin gestation, but from a certain rarer physiological type of dual development.

In most cases twins have separate appendages, and have been developed from distinct ova; but in a small proportion of recorded cases there is evidence in the placenta and enclosing structures, that the twins have been developed from two rudiments arising side by side in a single blastoderm. It is to the latter physiological category that double monsters in many cases belong, and there is some embryological evidence to support this opinion. Thus, Allen Thomson observed in the blastoderm of a hen's egg at the sixteenth or eighteenth hour of incubation, two primitive traces or rudiments of the back bone forming side by side; and in a goose's egg incubated five days he found in one blastoderm two embryos, each with rudiments of upper and lower extremities, crossing or cohering in the region of the future neck, and with only one heart between them. Similar observations had been published

by Wolf, von Bär and Reichert. Malformations in the earliest stages of the blastoderm have of late been observed in the ovum of the pike, pointing not so much to the symmetrical doubling of the primitive trace, as to irregular budding from the margin of the germinal disc. In any case the perfect physiological type appears to be two rudiments or one blastoderm whose entirely separate development produces twins (under these rarer circumstances), whose nearly separate development produces such double monsters as the Siamese twins, and whose less separate development produces the various singular forms of two individuals in one body. There can be no question of a literal fusion of two embryos; either the individuality of each was at no time complete, or if there were two distinct primitive traces, the uniaxial type was approximately reverted to in the process of development, as in the formation of the abdominal and thoracic viscera, limbs, pelvis or head. The Siamese twins are an instance of the union at the umbilical region, with the viscera distinct in every respect, except a slight vascular anastomosis and a common process or peritoneum; but it is more usual for union in that region to be more extensive, and to entail a single set of abdominal and thoracic viscera. The pelvis is one of the commonest regions for double monsters to be joined at, and, as in the head and abdomen, the junction may be slight or total. The Hungarian sisters, Helena and Judith (1701-1723), were joined at the sacrum, but had the pelvic cavity and pelvic organs separate; the same condition obtained in the South Carolina negroes, Millie and Christina, known as the two-headed nightingale, and in the other recent case of the Bohemian sisters, Rosalie and Josepha.

The following is an accurate representation of the interesting double monster or negro female twins united at the sacrum.

Millie and Crissie were quite intelligent and sang several songs with good effect. It is affirmed that they were but one being with but one common genital organ.

The Carolina Twins, Millie and Christine, are united by their lower lumbar vertebrae, sacrum and coccyx: there is a single anus and a single vulva, but two hymens, two clitorides, and, very probably, two vaginæ and two uteri.

The Hungarian Sisters, Helen and Judith, had but one vaginal orifice, although the upper part of that organ was divided into two, and the two intestines met in a single anus, placed between the four thighs.

The Bohemian Sisters, Rosalie and Josepha, more recently exhibited, in whom there is a junction of the posterior wall of the pelvis, present, apparently, a single urethra and a single anus, but a double vagina.



ENGRAVING NO. 14.

SOUTH CAROLINA TWINS, OR DOUBLE-HEADED NIGHTINGALE, MILLIE AND CRISSIE.

I had the opportunity of examining these South Carolina twins, during their exhibition in New Orleans, about the year 1869. There was evident fusion and decussation of the nervous elements of the spinal cord in the sacral region. Pressure, pricking or pinching the lower extremities of either twin was distinctly felt by the other. This was not the case with the upper extremities. Impressions made upon the hands, arms, head or heels of one twin were not felt or recognized by the other.

The four-legged child, J. Myrtle Corban, and the South Carolina Twins, Millie and Christine, may be referred to *Monsters, or Malformations by Excess*.

Two ova may be formed in one Graafian vesicle, for double-yelked eggs are well known; but there is no evidence to show that these would form a double monster. Thus, Professor Allen Thomson found, on incubating a

dozen of such eggs, that not one produced a double embryo; while Wolff observed two completely separate fœtuses developed upon a single yolk. The arrival of two impregnated ova in the uterus at the same time will probably give rise, not to double monsters, but to twins, and fusion seems almost impossible. Embryologists have thus been led to the opinion that monsters by excess depend chiefly on an error of development taking place in a single germ; and this idea has been supported by the fact that Allen Thomson has shown that in birds two primitive grooves may be formed in one yolk, and in the *area germinativa*; and in this way the most complete cases of double monstrosity can be explained. In confirmation of this theory the researches of Tireboullet may be cited. This observer has seen, instead of the single budding of the blastodermis, which is ordinarily developed into the embryo of the fish, two or even three buds marked off; and these, during the process of development, would meet at same point, and in this manner produce distinct parts of embryos when they are separate, whilst a corresponding region of a single organism only would be formed at the point of junction.

According to the mode and extent of the junction of the blastodermic buds, the monsters would vary; and so would be derived all the different varieties, from a duplicity of the face or head, the upper or lower extremities, to such extreme cases as those which we have cited, as the Hungarian Sisters, the Siamese Twins and the Carolina Twins.

The following singular and distressing case of malformation of the genital organs must be referred to an arrest of the development of the testicles during fœtal life:

This curious case of malformation of the genital organs came under my observation, and was brought before the medical class of the University of Louisiana.

ENGRAVING No. 15.



JOHN H. ALLEN.

SINGULAR AND DISTRESSING
CASE OF MALFORMATION OF
GENITAL ORGANS.

J. H. Allen, age 23, height 5 feet 7 inches, weight 150 lbs., native of Illinois, U. S. A. Dresses in male attire. Voice fine, like that of a woman. Face full and smooth, without any sign of a beard. Features resemble more nearly those of a woman. Mammary larger than is usual in men, but smaller than those of women. Nipples small, but well formed, with a distinct dark areola. No hairs around the mammae or on the breast, which is smooth like that of a woman. With the exception of the pubes and scalp, the body is devoid of hair. The general form is that of an athletic, masculine woman. Hips full, wider than chest. Circumference around hips $39\frac{1}{2}$ inches; circumference of chest during full inspiration, 35 inches; circumference of chest during expiration, 32 inches. Has a small, well-formed penis, three-fourths of an inch in length, and one and eight-tenths of an inch in

circumference, with glands, frenum, prepuce and orificial opening. The patient discharged urine through the opening in his prepuce. About the penis there is a slight swelling or tumour at the inguinal, with a distinct raphe or trunk, like that which divides the scrotum in men into two parts, extending from the anterior part of the scrotum to the extremity of the penis. Upon external examination, however, no testicles can be felt on either side of the raphe, or within any portion of the tumour which corresponds to the scrotum. A careful examination by the introduction of the finger into the rectum, while firm pressure was made upon the abdomen above the pubes, failed in detecting the existence of any body corresponding to a uterus. This examination, however, was not entirely satisfactory, on account of the thickness of the abdominal wall. Buttocks and thighs full and round. The upper line of the hairy pubes terminated abruptly, without any fading off in the median line, as in males.

I gathered the following facts from this individual:

Father of John H. Allen a strong, healthy man, native of Boston, Massachusetts; mother a healthy, well-formed woman, native of Pennsylvania; parents have had nine children, eight of whom were well formed; the eldest, a woman aged 25, has had three well-formed children. The subject of this examination is the second child. The third child, aged 21, is a woman and married. The remaining children were three boys and three girls; and of the number one girl and two boys have died; one boy, 12 years of age, well formed, living; two sisters, aged respectively 10 and 8 years, living.

The subject, J. H. Allen, has always been called Johnny, and was dressed as a boy from early childhood. Was not aware that there was anything peculiar to his organization until after the age of 10 years had been attained; upon one occasion, when conversing with a number of

boys, it was discovered that he was not formed like a boy, and was called by his companions "a half boy and half girl." Attended school up to the age of 17, and since this time has followed the occupation of "bartender." Has been taken up by the police upon several occasions as a woman in man's clothing, and, after being examined, has been released as a "nondescript," but has always been compelled by the authorities to wear male clothing.

Prefers the male sex; never loved a woman, regards women as sisters; has loved a man devotedly, but always feared to divulge the passion. Loves the dress of a woman and despises that of a man. When insulted feels like crying, as is common with women. When travelling on the Mississippi boats has several times been approached by rough men, who threatened rape, declaring that Johnny was a woman in man's clothing. Upon one or more occasions has excited the jealousy of women, on account of the supposed attentions of their husbands. When acting with a stock company, in the character of a woman, the wife of one of the actors who played the part of a lover to Johnny, was excited to violent jealousy.

When dressed in women's clothing neither men nor women ever suspect Johnny to be anything but what the dress and general appearance would indicate.

The condition of Johnny is most distressing: it is with great difficulty that a position or work of any kind can be secured or retained, on account of being suspected as a woman in man's clothing; and when travelling in strange places, or when walking upon the streets at night, is liable to insult and arrest. His most earnest wish is to be allowed to wear women's clothing and to enter the stage as an actress.

As far as my inquiries extended, there has not as yet been any periodic discharge of blood from the urethra, rectum, stomach, or nostrils, which could be considered as connected with the menstrual function, although the patient described certain vague and uncomfortable feelings in the abdomen and certain periodic changes of the complexion and features.



ENGRAVING NO. 16.

We have in the case of John H. Allen a strange admixture of the male and female natures. The male character is represented by the minute but well-formed penis, whilst the form of the body, as shown by the photographs which I caused to be taken, approached most nearly to that of a female. The members were in like manner feminine. This case resembles a HERMAPHRODITE in one sense, and in another a natural EUNUCH.

The engravings Nos. 15 and 16 represent the body and thighs and genital organs of John H. Allen.

In striking contrast to the case of John Allen, we have the following:

MISS E. LANDRY, THE BEARDED GIRL OF LOUISIANA.

This hairy and bearded girl was a native of Terrebonne parish, Louisiana, where she was born in the year 1873; and was exhibited during the last three years of her life to the public accompanied by her mother, Mrs. Landry. Her father, who still resides in Terrebonne parish, is a farmer.

The following is an accurate representation of Miss Landry. It will be seen that Miss Landry, at the age of thirteen years, when her photograph was taken, presents the appearance of a stout, plump, well-formed young woman, with well-developed mammae and full round hips.



ENGRAVING NO. 17.

MISS EMILY LANDRY, THE BEARDED AND HAIRY GIRL OF LOUISIANA.

Miss Landry was well formed and well grown for her age. Accompanying drawing represents her in the thirteenth year of her age, and shortly before death which occurred in Detroit, Mich., from diphtheria, contracted in Minneapolis, April 20th, 1887. The body was embalmed and was shipped to New Orleans, where it arrived April 22d, 1887.

Through the courtesy of the undertaker I was enabled to make a careful examination of the embalmed body, and found

that the mammæ and female organs were characteristic, and that with the exception of the beard, moustache and unusual growth of hair, she was what she was represented to be, a well-formed young woman. A relative informed me that Miss Landry had menstruated at three years of age; and that when her mother was pregnant she constantly gazed upon an oil painting of Christ, whose face was represented with a full beard. The child was born with a beard, and the mother attributed this *freak of nature* to the effects of the portrait of Christ.

Miss Emily Landry was covered with a moderately thick growth of soft light-brown hair from head to foot, and possessed a full beard of brown hair; the upper lip was covered with a light moustache. Eyes brown; hair dark-brown and abundant.

On the father's side, many of the males were said to be characterized by an excessive growth of hair.

The singular case of John Allen may be referred to the class of Hermaphrodites. Under the head of Hermaphroditism, or Hermaphrodism, may be included, 1st, some varieties of malformation in which the genital organs and general sexual configuration of one sex approach from imperfect or abnormal development, to those of the other; and, 2d, other varieties of malformation in which there actually exists in the body of the same individual more or fewer of the genital organs and distinctive sexual characters both of the male and female.

Hermaphroditism may be regarded as due to a failure of purpose, or to an uncertainty in the *nisus formativus* at an early stage of development.

There is a point of time following about the eighth week, up to which the embryo may develop either the reproductive organs of the male or the reproductive organs of the female; in the vast majority of cases, the future development and growth are carried only on one line or the other, but in a small number there is an ambiguous development leading to various degrees of Hermaphroditism or doubtful

sex. The primary indecision, so to speak, affects only the ovary or testes respectively, or rather the common germinal ridge, out of which either may develop; the uncertainty in this embryonic sexual ridge sometimes leads actually to the formation of a pair of ovaries and a pair of small testes, or to an ovary on one side and a testis on another; but even when there is no such double sex in the essential organs, as in the majority of Hermaphrodites, there is a great deal of doubting and ambiguity, entailed in the secondary or external organs, and parts of generation. These parts, which are rudimentary or obsolete in the male, but highly developed in the female, and those parts which are rudimentary in the female, but highly developed in the male, tend in the Hermaphrodite to be developed equally, and all of them in an imperfect manner. In some cases the internal organs of one sex go with the internal organs of the opposite sex.

It is possible that in the case of John Alien, the ovaries and uterus were developed partially, whilst the only representative of the male organs is the diminutive but well formed penis; hence the strange mingling of the male and female natures, the latter predominating in strength.

GENERAL CONCLUSIONS.

1. Monsters, giants and dwarfs occur in all countries, and amongst all races.

2. Whilst giants and dwarfs do not exhibit at this stage of the human race marked tendencies to reproduce themselves, it is not improbable that in the early ages of the development and multiplication of the human race special peculiarities of physiognomy, form and size may have been propagated and fostered by artificial and natural selection.

3. The peculiar flat, small head and prominent nose, characteristic of the ancient Mexicans and Peruvians, is occasionally reproduced at the present day. Such facts indicate that the peculiarly shaped heads represented upon the ruined temples and buildings of Mexico, Central America

and Peru, were natural representations of the ancient race. The artificial flattening of the cranium, practised by certain ancient nations of Europe and Asia, and by certain tribes of the aborigines in North, Central, Insular and South America, may have been suggested for the purpose of imitating the natural conformation of the heads of certain distinct tribes.

4. The hairy covering of the cave-dweller of ancient times is occasionally reproduced at the present time in the case of hairy men and bearded and hairy females.

5. The origin and mode of development of human monsters still constitutes one of the most important and interesting subjects for the study of the embryologist, anatomist and physiologist.

On the subject of the origin of double monsters, three hypotheses have been entertained:

A. The double monster has been supposed to have proceeded from two distinct embryos, which have become united during the course of development.

B. The double monster has originated in a single germ, which has become double or has been subdivided.

C. The germ is abnormally compound from the first; the organs and parts comprising the double monster are at once produced from this germ without either separation or coalition of its parts other than belong to the natural process of development.

On the comparative merits of the first and second hypotheses as parts of the general doctrine of monsters, one of the most interesting physiological discussions extant is recorded in the *Memoirs* of the Academy of Science of Paris, between 1724 and 1743.

The chief disputants were Lemery and Winslow; the contest lasted nineteen years; it engaged the attention of all anatomists, and called forth writings by Haller and a host of authors of less note, and was only terminated by the death of Lemery. Every argument that could be brought to bear upon the knowledge of those days was

urged, and the subject for the time was utterly exhausted. The subsequent labors of anatomists, biologists and embryologists have, however, accumulated such volumes of facts in latter years, that the same question between original and acquired monstrosity, as far as it relates to double monsters, may even claim the attention of anatomists and embryologists as being worthy of further discussion.

6. The following generalizations have been drawn from the facts recorded with reference to double monsters.

(a) The double monsters form collectively one class of organic beings, which, however different in their several degrees of malformation, may be arranged in one continuous series.

(b) There is no constant or positive relation between the external and internal organs as to their degrees or modes of duplicity.

(c) Parts placed on the surface of the body are more liable to multiplication than the internal organs, and duplicity of a single part is therefore much less rare than the formation of a complete double body.

(d) The upper half of the body is more frequently doubled than the lower.

(e) The union of the two bodies takes place only between similar parts.

(f) The more each of the bodies is developed the less is the bond of union between them.

(g) The probability of growing up is greater in the same proportion as the bond of union is smaller, and the coincident fusion of internal organs less.

(h) The further the several organs are from the situation at which the bodies are united, the more perfect they are.

(i) One body is almost always less developed than the other.

(j) There are commonly not any signs of a double monster having been at first two individuals. Except in

the cases of posterior and superior duplicity, and some singular examples of attachment of the umbilical cord of one foetus to the head or body of the other, there is never more than one placenta and one cord, and they usually contain only a single set of vessels, which divide when they reach the abdomen.

(k) In double monsters, the twins are of the same sex.

(l) Finally, we adopt the generalization of W. Vrolik, that it is probable that the whole class of monsters by excess owe their origin to different degrees of one common fault, and consequently that the explanation of their origin ought to be the same for all; that no kind of fusion can account for the production of supernumerary individual organs, the rest of the body being single; but that it is not impossible that excess of power in the ovum, which all admit, can alone explain the lower degrees of duplicity, may, in proportionately higher degrees, perhaps by the formation of two primitive grooves, produce the more complete double monsters, or even two such separate individuals as are sometimes found within a single amnion.

